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ABSTRACT

To evaluate the effectiveness of the Michigan Migrant Primary Interdisciplinary Project's (MMPIP) "Interdisciplinary Oral Language Guide; Primary One" in helping 1st graders having limited control of standard English with the oral language they require for school, 6 unique conditions were imposed on bilingual and non-bilingual students (n=180) from 5 southern Michigan school districts. Four experimental groups received enrichment through the MMPIP curricula, while 2 control groups did not. A fixed-effects 3-way analysis of variance with independent replications was used to analyze the results of the Conceptual Oral Language Test and the Michigan Oral Language Productive Test. Scores were significantly higher for those students who had contact with the MMPIP materials through classroom instruction and also for those students who had contact with MMPIP materials through tutorial instruction. No difference was shown between tutorial instruction and classroom instruction, except that non-bilingual students performed significantly better than bilingual students when given tutorial instruction. It was concluded that MMPIP materials were effective in helping children with English language difficulties to have a significantly more effective use of the English language than children with the same types of problems who do not use the MMPIP materials. Included are 4 figures and 6 tables. (Author/MJB)

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THE EFFECTIVENESS

OF

MICHIGAN MIGRANT PRIMARY INTERDISCIPLINARY PROJECT (MMPIP)

CURRICULA IN HELPING CHILDREN WITH ENGLISH LANGUAGE PROBLEMS

by
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[1970]

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ABSTRACT

THE EFFECTIVENESS OF MICHIGAN MIGRANT PRIMARY INTERDISCIPLINARY PROJECT (MMPIP) CURRICULA IN HELPING CHILDREN WITH ENGLISH LANGUAGE PROBLEMS

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Evaluation Consultant

This research focuses on the problem of the effectiveness of the Michigan Migrant Primary Interdisciplinary Project's Interdisciplinary Oral Language Guide: Primary One in helping first grade children who have a limited control of standard English by providing these children with the oral language they need for the school setting.

The subjects in this experiment consisted of 90 bilingual first grade students and 90 non-bilingual first grade students who had language difficulties. The 180 students in this study came from five different school districts in southern Michigan. The factorial design used to analyze the results of the Conceptual Oral Language Test (COLT) and the Michigan Oral Language Productive Test (MOLPT) was a fixed-effects three-way analysis of variance with independent replications.

The experiment consisted of six unique conditions. Four groups of students received enrichment through the MMPIP Curricula, while the two remaining control groups did not receive instruction using MMPIP Materials. One control group consisted of bilingual students who did not use the Primary One MMPIP Materials. The second control group consisted of non-bilingual students with English language difficulties who did not use the Primary One MMPIP Materials. A third condition consisted of bilingual students who received classroom instruction in English through the Primary One MMPIP Materials. The fourth

condition consisted of non-bilingual students with English language difficulties who received classroom instruction in English through the Primary One MMPIP Materials. Condition five consisted of bilingual students who received tutorial instruction using the MMPIP Materials. Finally, condition six consisted of non-bilingual students with English language difficulties who received tutorial instruction using the MMPIP Materials.

It was hypothesized that scores on the Conceptual Oral Language Test (COLT), both Conceptual and Language sections, and the Michigan Oral Language Productive Test (MOLPT) would be significantly greater for those students who had contact with the MMPIP Materials through classroom instruction than those students who had no contact with the MMPIP Materials.

It was also hypothesized that scores on the COLT, both the Conceptual and Language sections, and the MOLPT would be significantly greater for those students who had contact with the MMPIP Materials through tutorial instruction than those students who had no contact with the MMPIP Materials.

The two experimental hypotheses were supported by the results. In addition, the results showed that there was no difference between tutorial instruction and classroom instruction, except that non-bilingual students performed significantly better than bilingual students when given tutorial instruction.

It was concluded that MMPIP Materials are effective in helping children with English language difficulties to have a significantly more effective use of the English language than children with the same type of problems who do not use the MMPIP materials.

I. INTRODUCTION

The Michigan Migrant Primary Interdisciplinary Project (MMPIP) has created an oral language program, the Interdisciplinary Oral Language Guide: Primary One, for use with primary age, Spanish background children who have limited control of standard English. The guide is designed to help provide these children with the oral language they need for the school setting. During the 1969-1970 school year, schools having contact with children who have problems speaking standard English have approached the MMPIP curricula in three ways. One approach has been to present the curriculum to students in the classroom setting with the regular classroom teacher providing the instruction. Another approach has been to provide tutorial instruction to the target population of students. The tutorial instruction has been on an individual basis of one teacher with one pupil or in small groups containing two or three students and one teacher. A third approach to the problem is to not use the MMPIP Materials at all.

Even though the curriculum was written for use with Spanish background children, schools have employed it with non-Spanish background children who have language difficulties. These children include: blacks, poor Southern whites, and other children from non-standard English speaking backgrounds. The present study deals with the question of how effective the Primary One MMPIP curriculum has been in reaching its intended goals. Comparisons will be made on the basis of differences in dependent variable scores between the three various conditions under which the materials have been used.

(or not used) in the school districts involved.

The basic hypotheses in this study are, first of all, that either bilingual students, or non-bilingual students with English language difficulties, who use the MMPIP curriculum in the classroom will have a significantly more effective use of the English language than either bilingual students, or non-bilingual students with English language difficulties, who have not used the MMPIP Materials.

The second basic hypothesis is that either bilingual students, or non-bilingual students with English language difficulties, who use the MMPIP curriculum by being individually tutored will have a significantly more effective use of the English language than either bilingual students, or non-bilingual students with English language difficulties, who have not used the MMPIP Materials.

Operationally, the first hypothesis is that dependent variable scores on the Conceptual Oral Language Test, both Conceptual and Language sections, and the Michigan Oral Language Productive Test will be significantly greater for those students who have had contact with the MMPIP Materials through classroom instruction than those students who have had no contact with the materials.

Operationally, the second hypothesis is that dependent variable scores on the Conceptual Oral Language Test, both Conceptual and Language, and the Michigan Oral Language Productive Test will be significantly greater for those students who have had contact with the MMPIP Materials through tutorial instruction than those students who have had no contact with the materials.

II. METHOD

A. SUBJECTS

The subjects in this experiment were first grade level children drawn from five major school districts in Michigan which have had contact with the MMPIP curricula. The school districts involved were: Pontiac, Adrian, Lansing, Grand Rapids, and Fennville. The subjects who were chosen for this study were identified by their teachers as being either bilingual migrant children or non-bilingual migrant children with English language difficulties. The total number of subjects in the experiment was 180.

B. MATERIALS

The data were obtained on each subject from three principal sources: The Lorge-Thorndike Intelligence Test - level one, the Conceptual Oral Language Test, and the Michigan Oral Language Productive Test. The Lorge-Thorndike Test was used to obtain a measure of intelligence on each subject. The Conceptual Oral Language Test, when modified from its original form, was used to obtain a measure of conceptual and language development in children. The Michigan Oral Language Productive Test was used to obtain a measure of each student's ability to produce standard grammatical and phonological features when speaking English. The Conceptual Oral Language Test was modified from its original form because it was felt that the original test contained many items which were inappropriate in terms of cognitive abilities for first grade children. In addition, some items were ambiguous in terms of not leading to a single response.

The test originally contained 60 items. From these original 60 items, 30 were found useful and were administered to the subjects.

C. EXPERIMENTAL DESIGN

This study was designed and conducted by the author. All data used herein were collected specifically for this experiment. In other words, no data or designs previously utilized by the MMPIP program were applicable for this study, and no previous designs or data were used in this research.

A factorial design was used in this experiment to test each independent variable separately and also the interaction of the independent variables. See Figure A.

		TYPE OF USE OF MATERIALS			
		B_1 No Use of Materials (control)	B_2 Total Classroom Use of Materials	B_3 Tutorial Use of Materials	TOTAL
BACKGROUND OF STUDENTS	A_1 (Bilingual)	N = 30	N = 30	N = 30	N = 90
	A_2 (Non-bilingual)	N = 30	N = 30	N = 30	N = 90
	TOTAL	N = 60	N = 60	N = 60	N=180 N=180

FIGURE A

Two x Three factorial design to test both background of students and type of use of materials separately, plus the interaction of these two independent variables.

The experiment consisted of six unique conditions. See Figure B. Four conditions were enrichment conditions, while the remaining two conditions were control groups. The independent variables were: background of student (bilingual or non-bilingual with English language difficulties) and type of use of MMPIP Materials (total classroom use, tutorial use, or no use of the materials). The dependent variables were number of correct responses on both the language and oral part of the Conceptual Oral Language Test and number of correct responses on the Michigan Oral Language Productive Test.

Factorial Design

Type of Use of Materials

Background of Students	B_1	B_2	B_3
A_1	A_1 B_1	A_1 B_2	A_1 B_3
A_2	A_2 B_1	A_2 B_2	A_2 B_3

A_1 = Bilingual

A_2 = Non-bilingual with English language difficulties

B_1 = Non use of materials (control)

B_2 = Total classroom use of materials

B_3 = Tutorial use of materials

FIGURE B

The interaction of Background of Students and Type of Use of Materials.

The first condition (A_1B_1) was a control group. It consisted of bilingual students who did not use the Primary One MMPIP Materials. A second condition (A_2B_1) consisted of non-bilingual students with English language difficulties who did not use the Primary One MMPIP Materials. This condition was also a control group.

A third condition (A_1B_2) consisted of bilingual students who received classroom instruction in English through the Primary One MMPIP Materials. Condition four (A_2B_2) consisted of non-bilingual students who received classroom instruction in English through the Primary One MMPIP Materials.

Condition five (A_1B_3) consisted of bilingual students who received tutorial instruction using the MMPIP Materials. Condition six (A_2B_3) contained non-bilingual students with English language difficulties who received tutorial instruction using the MMPIP Materials.

Thus, the factorial design permitted assessment of the effect of students with bilingual Spanish backgrounds for each of three types of usage of MMPIP Materials (total classroom use, tutorial use, or no use of the materials) by comparison with the same type of presentation of materials to non-bilingual students with English language difficulties.

D. PROCEDURE

During the first week in April, 1970, contact was made with each school district in the Michigan Migrant Program. At this time, the present research design was discussed with each school system involved in the study, and plans for implementing the research design were outlined. The actual testing of children was begun in mid-April and terminated early in June. The students in the study were randomly chosen from the population of bilingual children and the population of non-bilingual children with English language difficulties in each of the school districts having contact with the MMPIP curricula. The sampling procedure involved obtaining lists of bilingual children and non-bilingual children with English language difficulties from the school. I.Q. tests were given and these populations were dichotomized into high and low I.Q. groups within each of the major experimental conditions in the study, i.e., tutorial use of the MMPIP curriculum, classroom use of the MMPIP curriculum; and control group or no use of MMPIP materials. The sample was drawn on the basis of each group containing fifteen (15) subjects. Thus the two-way factorial design (A,b) discussed earlier became a three-way classification (A,B,C). See Figures C and D.

The testing of the subjects was conducted principally by two experimenters: the author of this study and one of the curricular writers. In one of the school systems it became necessary to elicit the assistance of one of the MMPIP Project Field Coordinators to help with the testing of about fifteen students.

Two-Way Design (A,B)

Type of Usage of Materials

		B_1	B_2	B_3
BACKGROUND OF STUDENTS	A_1	A_1B_1	A_1B_2	A_1B_3
	A_2	A_2B_1	A_2B_2	A_2B_3

Three-Way Design (A,B,C)

Type of Usage of Materials

		B_1 I.Q.		B_2 I.Q.		B_3 I.Q.	
		C_1	C_2	C_1	C_2	C_1	C_2
BACKGROUND OF STUDENTS	A_1	$A_1B_1C_1$	$A_1B_1C_2$	$A_1B_2C_1$	$A_1B_2C_2$	$A_1B_3C_1$	$A_1B_3C_2$
	A_2	$A_2B_1C_1$	$A_2B_1C_2$	$A_2B_2C_1$	$A_2B_2C_2$	$A_2B_3C_1$	$A_2B_3C_2$

A_1 = Bilingual

A_2 = Non-bilingual with English language difficulties

B_1 = Non use of materials (control)

B_2 = Total classroom use

B_3 = Tutorial use of materials

C_1 = High I.Q.

C_2 = Low I.Q.

FIGURE C

Difference between the two-way factorial design and the three-way factorial design

8

	---------- Type of Use of Materials ----------						
	B_1		B_2		B_3		TOTAL
	C_1	C_2	C_1	C_2	C_1	C_2	
A_1	15	15	15	15	15	15	90
A_2	15	15	15	15	15	15	90
TOTAL	30	30	30	30	30	30	180 / 180

FIGURE D

Two by three by two factorial design for 180 subjects

The scoring of I.Q. tests, COLT Language and Conceptual, and MOLPT for 180 subjects was accomplished by this author with a MMPIP Secretary double-checking all of the scoring. It was hoped that this procedure would allow few scoring errors.

The I.Q. test was administered to the students in groups of up to classroom size. The other tests (COLT and MOLPT) were administered to one child at a time and took approximately 20 minutes. When all of the results were collected, they were scored in random order. When all of the scoring was completed, each condition was tablulated and an analysis of variance and t-tests were used to analyze the results.

E. STATISTICAL HYPOTHESES AND STATISTICAL TESTS EMPLOYED

The Null Hypothesis for the first experimental hypothesis is: there is no difference in performance between groups of students who received classroom instruction by means of MMPIP Materials, from those students who received no instruction through MMPIP Materials.

The Nyll Hypothesis for the second experimental hypothesis is: there is no difference in performance between groups of students who received tutorial instruction by means of MMPIP Materials from those students who received no instruction through MMPIP Materials.

A fixed-effects analysis of variance was one of the statistical tests employed. In the analysis of variance, the Null Hypothesis for the conditions involving the MMPIP Materials became $B_1=B_2=B_3$ for both bilingual and non-bilingual (A_1 and A_2).

A t-test following the F-test was employed to test each individual comparison between groups. The computational formulas for these statistical tests are standard and can be found in a statistics book such as Winer (1962)*, pages 228 through 258.

* Winer, B. J., Statistical Principles in Experimental Design, McGraw-Hill Book Co., New York, 1962

III. RESULTS

The test results revealed the raw score data shown below in Table A.

Raw Scores

COLT-CONCEPTUAL

	B_1		B_2		B_3	
	C_1	C_2	C_1	C_2	C_1	C_2
A_1	7,1,5,3,7, 6,5,7,4,4, 4,5,3,5,5	3,7,3,7,8, 6,4,3,4,4, 2,5,4,3,5	8,4,7,7,5, 8,5,4,7,6, 9,9,9,7,9	11,7,7,9,6 9,9,8,9,8, 7,5,7,7,10	4,8,8,5,8, 8,6,8,8,6, 11,9,9,9,10	5,7,7,6,9, 3,9,8,11,11, 8,9,5,8,11
A_2	6,3,3,7,5, 6,3,7,3,5, 3,5,4,3,6	3,2,4,5,3, 2,6,3,3,6, 1,4,2,3,4	11,5,7,6,9 4,6,4,8,10 12,11,9,12 7	4,4,7,12,7 6,6,8,5,6, 3,9,10,7,3	12,11,10,8, 1,11,10,11, 7,12,7,9,10 10,10	10,8,6,8,9, 8,5,7,5,12, 9,10,10,10, 11

COLT-LANGUAGE

	B_1		B_2		B_3	
	C_1	C_2	C_1	C_2	C_1	C_2
A_1	7,0,1,1,5, 2,5,4,2,3, 3,3,3,4,1	0,1,0,2,2, 1,0,0,0,1, 0,1,2,1,3	5,4,4,3,5, 8,2,3,6,3, 9,9,9,7,9	9,6,7,9,3, 7,7,8,9,8, 7,3,7,6,7	3,8,0,4,5, 5,3,8,4,5, 8,7,7,9,10	0,6,6,6,3, 9,7,10,9,8 9,5,8,11,3
A_2	2,0,2,1,4, 2,1,4,1,2, 0,2,3,2,3	0,0,0,1,2, 2,3,1,0,2, 0,2,0,1,0	7,8,3,5,6, 4,1,3,8,10 12,11,9,11 10	3,3,3,11,6 5,2,7,4,6, 3,1,10,7,3	0,8,9,8,6, 11,7,8,8, 10,,8,8,12, 11,10	7,5,6,4,12 9,10,7,10, 10,8,6,7,7, 10

TABLE A
Raw Score Results using a Three Way Factorial Design
(Table A continued on next page)

TABLE A
(continued)

Raw Score Results Using a Three-Way Factorial Design

MOLPT

	B_1		B_2		B_3	
	C_1	C_2	C_1	C_2	C_1	C_2
A_1	18,25,5,25, 26,20,21,29 24,30,27,25 22,19,20	26,5,20,9, 15,17,27,8, 15,14,10,2, 24,7,9	38,39,31,22 18,31,38,27 32,9,35,39 35,35,38	39,24,25,18 20,22,30,36 30,38,38,18 35,38,33	22,40,23,32 33,9,21,40, 30,27,17,28 24,34,40	24,34,12,11 26,17,33,25 20,20,30,31 25,39,31
A_2	19,33,19,27 23,27,25,15 22,17,18,17 24,21,13	14,10,20,11 12,20,15,23 18,18,20,17 19,11,8	36,29,37,40 41,39,39,42 39,37,38,34 31,28,39	30,37,31,35 38,29,29,37 39,28,27,26 37,36,34	29,34,25,33 36,28,40,34 38,40,36,42 37,35,29	39,37,31,16 18,37,39,39 34,35,35,34 41,36,39

The Mean Score results are shown in Tables B and C.

TABLE B
(below)

Mean Score Results Using a Three-way Factorial Design

	B_1		B_2		B_3	
	C_1	C_2	C_1	C_2	C_1	C_2
A_1	x = 4.73 y = 2.93 z =22.40	x = 4.53 y = .93 z =13.86	x = 6.93 y = 5.73 z =31.13	x = 7.93 y = 6.86 z =29.60	x = 7.80 y = 5.73 z =28.00	x = 7.80 y = 6.66 z =25.20
A_2	x = 4.60 y = 1.93 z =21.33	x = 3.40 y = 0.9333 z =15.733	x = 8.06 y = 7.20 z =36.60	x = 6.46 y = 4.93 z =32.86	x = 9.26 y = 8.26 z =34.40	x = 8.53 y = 7.86 z =34.00

x = COLT - Conceptual
y = COLT - Language
z = MOLPT

A_1 = Bilingual

A_2 = Non-bilingual

B_1 = Control (Non use of materials)

B_2 = Total classroom use of materials

B_3 = Tutorial use of materials

C_1 = High I.Q.

C_2 = Low I.Q.

Mean Scores Using a Two-Way Factorial Design

	B1	B2	B3
A1	x = 4.63 y = 1.93 z =18.13	x = 7.43 y = 6.3 z =30.37	x = 7.80 y = 6.20 z =26.6
A2	x = 4.00 y = 1.43 z =18.53	x = 7.26 y = 6.07 z =34.73	x = 8.90 y = 8.06 z =34.2

TABLE C

Mean Scores

The results of a fixed-effects three-way analysis of variance were obtained. See Table D.

Summary Table for Analysis of Variance

COLT - CONCEPTUAL

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio	Level of Significance	Level Needed for .01
A (Background)	.4488	1	.4488	.1047	not sig.	6.78
B (Enrichment)	529.37	2	264.69	61.785	above .01	4.73
C (I.Q.)	9.337	1	9.337	2.179	not sig.	6.78
AB (Interaction)	24.1354	2	12.07	2.817	not sig.	4.73
AC (Interaction)	23.475	1	23.475	5.479*	not sig.	6.78
BC (Interaction)	1.3797	2	.6898	.161	not sig.	4.73
ABC (Interaction)	7.6449	2	3.822	.8921	not sig.	4.73
Within group experimental error	719.8670	168	4.284			
TOTAL	1315.66	179				

* Sig. at .05 level
(3.9 needed)

TABLE D

Analysis of Variance using a Three-Way Factorial Design

(continued next page)

COLT - LANGUAGE

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio	Level of Significance	Level Needed for .01
A (Background)	6.4222	1	6.4222	1.16432	not sig.	6.78
B (Enrichment)	1017.10	2	508.55	92.1987	above .01	4.73
C (I.Q.)	16.2	1	16.2	2.937	not sig.	6.78
AB (Interaction)	50.9333	2	25.466	4.617*	not sig.	4.73
AC (Interaction)	18.0444	1	18.0444	3.2714	not sig.	6.78
BC (Interaction)	23.7333	2	11.8666	2.1513	not sig.	4.73
ABC (Interaction)	35.62	2	17.81	3.2289*	not sig.	4.73
Within group experimental error	926.6674	168	5.5158			
TOTAL	2094	179				

* Sig. at .05 level (3.05 needed)

MOLPT

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio	Level of Significance	Level Needed for .01
A (Background)	764.6722	1	764.6722	16.862	above .01	6.78
B (Enrichment)	7046.8111	2	3523.405	77.699	above .01	4.73
C (I.Q.)	638.45	1	638.45	14.079	above .01	6.78
AB (Interaction)	390.1445	2	195.072	4.301*	not sig.	4.73
AC (Interaction)	12.2723	1	12.2723	.2706	not sig.	6.78
BC (Interaction)	253.0334	2	126.5167	2.789	not sig.	4.73
ABC (Interaction)	59.744	2	29.872	.6587	not sig.	4.73
Within group experimental error	7618.267	168	45.3468			
TOTAL	16,783.3945	179				

* Sig. at .05 level (3.05 needed)

TABLE D
Analysis of variance using
A Three-Way Factorial Design

With respect to the Conceptual part of the COLT, the mean for variable A_1 was 6.62, while the mean for variable A_2 was 6.71. The difference in mean scores for variable A, or background of students, was not significant, according to an F-ratio of .1047, where 6.78 was needed for the .01 level of significance. Also, the mean value for C_1 was 6.896 and C_2 was 6.44. This difference was not significant; 6.78 was needed and 2.179 was obtained for the F-ratio. See Table E.

The third main effect, variable B (type of enrichment), showed a significant difference between the mean scores. B_1 was 14.315, B_2 was 7.345, and B_3 was 8.35. The F-ratio was 61.785, when 4.73 was needed for significance at the .01 level. Therefore, the Null Hypothesis $B_1 = B_2 = B_3$ was rejected with considerable confidence. In other words, with respect to the Conceptual part of the COLT, there was a statistically significant difference between the performance of groups of students who used the MMPIP Materials from students who did not use the Materials.

Means:	COLT-Conceptual	Means:	COLT-Language
Variable:	$A_1 = 6.62$	Variable:	$A_1 = 4.81$
	$A_2 = 6.71$		$A_2 = 5.18$
	$B_1 = 4.315$		$B_1 = 1.68$
	$B_2 = 7.345$		$B_2 = 6.185$
	$B_3 = 8.35$		$B_3 = 7.13$
	$C_1 = 6.896$		$C_1 = 5.296$
	$C_2 = 6.44$		$C_2 = 4.695$

Means: MOLPT
Variable: $A_1 = 25.366$
$A_2 = 29.153$

$B_1 = 18.83$
$B_2 = 32.55$
$B_3 = 30.4$

$C_1 = 29.31$
$C_2 = 25.208$

TABLE E

Independent Mean Scores

In terms of the Language part of the COLT, the mean for variable A_1 was 4.81, while the mean for variable A_2 was 5.18. The difference in mean scores for variable A, or background of students, was not significant, according to an F-ratio of 1.16432 where 6.78 was needed for the .01 level of significance. Also, the mean value for C_1 was 5.296 and C_2 was 4.695. The difference was not significant; 6.78 was needed, and 2.937 was obtained for the F-ratio. The third main effect, variable B, or type of enrichment, showed a significant difference between the mean scores. B_1 was 1.08, B_2 was 6.185, and B_3 was 7.13. The F-ratio was 92.1987, when 4.73 was needed for significance at the .01 level. Therefore, the Null Hypothesis $B_1=B_2=B_3$ was rejected with considerable confidence. In other words, with respect to the Language part of the COLT, there was a statistically significant difference between the performance of groups of students who used the MMPIP Materials from students who did not use the Materials.

The MOLPT revealed a mean for variable A_1 of 25.366 and a mean for variable A_2 of 29.153. The difference in mean scores for variable A (background of student) was significant at the .01 level. In other words, there was a statistically significant difference between the performance of bilingual students from non-bilingual students on the MOLPT with the non-bilingual students performing significantly better.

The results of the MOLPT also indicated a mean score for variable C_1 of 29.31 and 25.208 for variable C_2. This difference was statistically significant at the .01 level. An F value of 14.079 was obtained, while 6.78 was needed for significance at the .01 level. Therefore, there was a statistically significant difference between the performance on the MOLPT between students with high I.Q. scores and students with low I.Q. scores.

Finally, the results of the MOLPT for variable B showed a significant difference between mean scores. B_1 was 18.83, B_2 was 32.55, and B_3 was 30.40. The F-ratio was 77.699, when 4.73 was needed for significance at the .01 level. Therefore, the Null Hypothesis $B_1=B_2=B_3$ was rejected with considerable confidence. In other words, with respect to the MOLPT, there was a significant difference between the performance of groups of students who used the MMPIP Materials from students who did not use the Materials.

None of the Interactions, AB, AC, BC, or ABC, was significant at the .01 level on any of the three tests.

The results of an analysis of variance, using a factorial design with two independent variables (A and B), were identical to the three-way analysis of variance computed above.

The significant overall F on the scores reflecting main effect B indicated that individual comparisons should be made between conditions on that variable.* The results of a t-test for each individual comparison are summarized in Table F. These results supported the experimental hypotheses in the study.

* These comparisons were made by means of a series of t-tests.

Summary Table I for Results of t-Tests

First Group Mean X_1	Second Group Mean X_2	t-Value	t - needed for sig. at .01 level	Significance Level
A_1B_1	A_1B_2	6.285	2.68	above .01
A_1B_1	A_1B_3	6.441	2.68	above .01
A_1B_2	A_1B_3	.743	2.68	not significant
A_2B_1	A_2B_2	5.60	2.68	above .01
A_2B_1	A_2B_3	9.203	2.68	above .01
A_2B_2	A_2B_3	2.43*	2.68	not significant

* Sig. at .05 level
(2.01 needed)

Individual Comparisons between Groups
(above)
COLT - Conceptual

Summary Table II for Results of t-tests

First Group Mean X_1	Second Group Mean X_2	t-Value	t - needed for sig. at .01 level	Significance Level
A_1B_1	A_1B_2	8.2780	2.68	above .01
A_1B_1	A_1B_3	6.964	2.68	above .01
A_1B_2	A_1B_3	.1503	2.68	not significant
A_2B_1	A_2B_2	7.21	2.68	above .01
A_2B_1	A_2B_3	12.9315	2.68	above .01
A_2B_2	A_2B_3	2.62*	2.68	not significant

* Sig. at .05 level
(2.01 needed)

Individual Comparisons between Groups

COLT - Language

TABLE F

Summary Table III for Results of t-Tests

First Group Mean X_1	Second Group Mean X_2	t-Value	t - needed for sig. at .01 level	Significance Level
For B Effect:				
A_1B_1	A_1B_2	6.366	2.68	above .01
A_1B_1	A_1B_3	4.111	2.68	above .01
A_1B_2	A_1B_3	1.749	2.68	not significant
A_2B_1	A_2B_2	12.090	2.68	above .01
A_2B_1	A_2B_3	10.2943	2.68	above .01
A_2B_2	A_2B_3	.374	2.68	not significant
For A Effect:				
A_1B_1	A_2B_1	.431	2.68	not significant
A_1B_2	A_2B_2	2.526*	2.68	not significant
A_1B_3	A_2B_3	4.00	2.68	above .01
For C Effect:				
$A_1B_1C_1$	$A_1B_1C_2$	3.376	2.763	above .01
$A_2C_1C_1$	$A_2B_1C_2$	3.111	2.763	above .01
$A_1B_2C_1$	$A_1B_2C_2$	.504	2.763	not significant
$A_1B_3C_1$	$A_1B_3C_2$	.898	2.763	not significant
$A_2B_2C_1$	$A_2B_2C_2$	2.333*	2.763	not significant
$A_2B_3C_1$	$A_2B_3C_2$	.174	2.763	not significant
$A_1B_1C_1$	$A_1B_2C_1$	3.1803	2.763	above .01
$A_1B_1C_2$	$A_1B_2C_2$	2.838	2.763	above .01
$A_1B_1C_1$	$A_1B_3C_1$	2.072*	2.763	not significant
$A_1B_1C_2$	$A_1B_3C_2$	3.9238	2.763	above .01
$A_1B_2C_1$	$A_1B_3C_1$	.978	2.763	not significant
$A_1B_2C_2$	$A_1B_3C_2$	1.515	2.763	not significant
$A_2B_1C_1$	$A_2B_2C_1$	8.676	2.763	above .01
$A_2B_1C_2$	$A_2B_2C_2$	10.394	2.763	above .01
$A_2B_1C_1$	$A_2B_3C_1$	7.008	2.763	above .01
$A_2B_1C_2$	$A_2B_3C_2$	8.178	2.763	above .01
$A_2B_2C_1$	$A_2B_3C_1$	1.311	2.763	not significant
$A_2B_2C_2$	$A_2B_3C_2$	.510	2.763	not significant

* Sig. at the .05 level
(2.048 needed)

Individual Comparisons between Groups

MOLPT

TABLE F

IV. SUMMARY AND CONCLUSIONS

Several experimental findings were obtained in this study. The two experimental hypotheses were supported by the results. One such finding was that students with English language difficulties who were given classroom instruction using the MMPIP Materials performed significantly better on the COLT and MOLPT than students with similar English language difficulties who did not use the MMPIP Materials.

A second finding was that students with English language difficulties who were given tutorial instruction using the MMPIP Materials performed significantly better on the COLT and the MOLPT than students with similar English language difficulties who did not use the MMPIP Materials.

The basic conclusion of this study is that MMPIP Materials are effective in helping children with language difficulties to have a significantly more effective use of the English language than children with the same type of problem who do not use the MMPIP Materials.

The results showed that tutorial instruction was no more effective than total classroom instruction except for non-bilingual students. In this case, there was a statistically significant difference between the performance of non-bilingual students who were tutored from the performance of bilingual students who received tutorial instruction with the non-bilingual students performing better.

Without wanting to overstate the importance of the results of this study, it is concluded that enrichments, such as the MMPIP Materials, are very helpful, if not necessary, for helping children with English language difficulties to speak standard English.